



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,553	01/23/2002	In Chul Jeong	0465-0838P-SP	5490
2292	7590	09/21/2006		EXAMINER
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				STINSON, FRANKIE L
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.	JEONG ET AL.
10/052,553	
Examiner	Art Unit
FRANKIE L. STINSON	1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 02 August 2006.  
2a) This action is FINAL.                    2b) This action is non-final.  
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1,3,4,9-22 and 24-28 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) Claim(s) 13-16,24 and 25 is/are allowed.  
6) Claim(s) 1, 3, 4, 9-12, 17-22, 26 is/are rejected.  
7) Claim(s) 27 and 28 is/are objected to.  
8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.  
10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ .  | 6) <input type="checkbox"/> Other: _____ .                        |

Art Unit: 1746

1. The indicated allowability of claims 18 and 26 is withdrawn in view of the newly discovered reference(s) to Mautsch and Liu et al. Rejections based on the newly cited reference(s) follow.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4, 12, 19, 20, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Fukumoto et al. (U. S. Pat. No. 6,282,928) or Constantine (U. S. Pat. No. 2,607,209) in view of either Leonard (U. S. Pat. No. 3,012,333) or Japan'092 (Japan 57-58092) or Japan'563 (Japan 54-125563).

Re claims 1 and 22, Fukumoto (see figs. 7-9) discloses a washing machine comprising.

a first tub (14);

a second tub (13 ) disposed in the first tub;

at least one circulation duct (24) operatively coupled with the first tub to receive air from the second tub, dehumidify the air and recirculate the dehumidified air back into the second tub to dry laundry in the second tub during a drying operation of the washing machine; and

a water supplying duct (43) for supplying external water to an upper part of the inside wall of the least one circulation duct to flow down the duct to dehumidify the air in the at least one circulation duct primarily by flowing down the inner wall coming in direct contact with the air in the circulation duct; (note that Fukumoto discloses a

condenser/heat exchanger 31, wherein humid air contacts the inner wall of the heat exchanger where the heat thereof, is exchanged and dehydrated at this surface (col. 5, lines 5-8 and col. 7, lines 2-5). The condenser/heat exchanger is operated under either the air-cooled principle or the water-cooled principle (col. 6, lines 14-16). The air-cooled principle as described (col. 6, lines 39-48, and col. 7, lines 2-5), has the condenser/heat exchanger being cooled by cooling air, introduced by a fan 36. The examiner understands this operation being that the cooling air introduced by fan 36 contacts the tube 31, thereby cooling the same, and the humid air in the tube, contacts the inner wall surface, exchanges heat and is dehydrated. Based on the above, it is the examiner's position that in the water-cooled principle, the condenser/heat exchanger is now cooled by water, in stead of air, where water is introduced this time, to the inside of the condenser/heat, and based upon the described air-cooled principle, the cooling water would also contacts the tube but this time the inner surface, so that the humid air in contact with the inner wall of the condenser/heat exchanger tube is exchanged and dehydrated);

wherein, the one circulation duct has a plurality of grooves (as at 39, col. 7, lines 18-21) provided at an inner surface therefor, for prolonging a heat exchange time period (drag is inherent) of the hot and humid air by reducing the flow speed of water along the inner walls of the circulation duct, that differs from the claim only in the recitation of the recitation of the water supplying duct supplying water to an upper part of the circulation duct and the plurality of grooves being of a helical configuration. Leonard, Japan'092 and Japan'563 are each cited disclosing a condenser/heat exchanger, having an air

circulation duct with a plurality of configurations (23, 24 in Leonard; 2 in Japan'092 and 3, 4 in Japan'563) for prolonging a heat exchange time period of the hot humid air by reducing the flow of speed of water along the inner walls of the circulation duct. Leonard also discloses the water supply duct being at an upper part of the duct. It therefore would have been obvious to one having ordinary skill in the art to modify the duct and grooves of Fukumoto, to include configurations as taught by either Leonard, Japan'092 or Japan'563), for the purpose of enhancing the heat transfer efficiency and removal of water from the circulating drying air as is common and ole and well known in the art. As for the configurations being helical groves, the same is deemed to be of little patentable weight in that this is considered to merely be a change in shape see **MPEP 2144-02 IV.**

#### **CHANGES IN SIZE, SHAPE, OR SEQUENCE OF ADDING INGREDIENTS**

##### **B. Changes in Shape**

In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.). Nonetheless, Japan'563 and Japan'092 each disclose the helical shape as claimed.

Re claim 1, Constantine is cited disclosing a washing machine comprising.

a first tub (10);

a second tub (11) disposed in the first tub;

at least one circulation duct (18) operatively coupled with the first tub to receive

air from the second tub, dehumidify the air and recirculate the dehumidified air back into the second tub to dry laundry in the second tub during a drying operation of the washing machine; and

a water supplying duct (33) for supplying external water to an upper part of the inside wall of the least one circulation duct to flow down the duct to dehumidify the air in the at least one circulation duct primarily by flowing down the inner wall coming in direct contact with the air in the circulation duct (see col. 4, lines 4-20) that differs from the claim only in the recitation of the circulation duct having a plurality of grooves with helical configurations for prolonging a heat exchange time period of the hot humid air by reducing the flow of speed of water along the inner walls of the circulation duct.

Leonard, Japan'092 and Japan'563 are each cited disclosing are each cited disclosing an air circulation duct having a plurality of configurations (23, 24 in Leonard; 2 in Japan'092 and 3, 4 in Japan'563) for prolonging a heat exchange time period of the hot humid air by reducing the flow of speed of water along the inner walls of the circulation duct. It therefore would have been obvious to one having ordinary skill in the art to modify the duct of Constantine, to include configurations as taught by either Leonard, Japan'092 or Japan'563), for the purpose of enhancing the heat transfer efficiency and removal of water from the circulating drying air as is common and old and well known in the condenser art. As for the configurations being helical grooves, the same is deemed to be of little patentable weight in that this is considered to merely be a change in shape see **MPEP IV. CHANGES IN SIZE, SHAPE, OR SEQUENCE OF ADDING INGREDIENTS, B. Changes in Shape** as noted above. Nonetheless, japan'092 and

japan'563 disclose the helical configurations. Re claims 3, Fukumoto and Constantine discloses the fan (26 in Fukumoto and 21 in Constantine) and heater (25 in Fukumoto and 24 in Constantine). Re claim 4, no patentable distinction is deemed to exist between the fan as claimed and the fan as taught by either Fukumoto or Constantine. Re claim 12, Fukumoto discloses the fins (39). Re claim 19, Fukumoto discloses the pulsator (16, 19). Re claim 20, Fukumoto and Constantine discloses the drain duct (22 and not shown in Constantine) and the spaced circulation duct (24). Re claim 21, Fukumoto discloses the location as claimed and the location is of little patentable weight with respect to the arrangement in Constantine. **MPEP 2144-02 VI. REVERSAL,**

### **DUPLICATION, OR REARRANGEMENT OF PARTS**

#### **C. Rearrangement of Parts**

In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) (Claims to a hydraulic power press which read on the prior art except with regard to the position of the starting switch were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device.); In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice). However, “The mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for the worker in the art, without the

benefit of appellant's specification, to make the necessary changes in the reference device." Ex parte Chicago Rawhide Mfg. Co., 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984.). Re claim 22, with respect to Constantine, Constantine discloses the grooves as claimed, as proposedly modified by Leonard, Japan'092 or Japan'563.

4. Claims 9, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applied prior art as applied to claim 1 above, and further in view of WIPO'169 (WIPO 93/17169).

Claims 9 and 11 define over either Fukumoto or Constantine only in the recitation of a fan, for supplying of external air to an outer surface of the circulating duct. WIPO'169 (see page 4, lines 21-25, see fig. 1) is cited disclosing a fan (19) for supplying external air to the outside surface of the circulating duct (13) as claimed. It therefore would have been obvious to one having ordinary skill in the art to modify the device of either Fukumoto or Constantine, to include a fan as taught by WIPO'169 for the purpose of enhancing the water removal efficiency of the condenser. Re claim 17, no patentable distinction is deemed to exist between the fan as claimed and the fan as taught by Fukumoto, Constantine, Leonard or WIPO'169. The same are the functional equivalent of each other in that they both are employed to move external air to circulation duct for dehumidification purposes.

5. Claim 12 is also rejected under 35 U.S.C. 103(a) as being unpatentable over the Constantine as applied to claim 1 above, and further in view of either Morton et al. (U. S. Pat. No. 3,248,801) or Taylor (U. S. Pat. No. 4,103,433).

Claim 12 defines over Constantine only in the recitation of fins on the circulation duct.

Morton and Taylor are each cited disclosing that it is old and well known to provide external fins on a circulation duct in a washer/dryer as claimed, for efficient heat transfer. It therefore would have been obvious to one having ordinary skill in the art to modify the duct of Constantine, to include fins as taught by either Morton or Taylor, since it is old and well known in the art to employ fins on a dehumidifying duct for the purpose of dissipating heat for a heat exchange function. Also note that Fukumoto discloses the fins (39).

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applied prior art as applied to claim 1 above, and further in view of Krupsky U. S. Pat. No. 3,402,576 or Brucken et al. (U. S. Pat. No. 3,216,126).

Claim 10 defines over the applied prior art only in the recitation of the external air supplying duct for supplying external air towards the at least one circulation duct, said external air supplying duct has having an outlet disposed in the said at least one circulation duct; and

an air fan disposed to draw the external air into the external air-supplying duct.

The patents to Brucken (as at 82) and Krupsky (as at 81) are cited disclosing that it is old and well known to provide a laundry dryer, which also comprises a washing machine, external air supplying duct for supplying external air towards the at least one circulation duct, said external air supplying duct has having an outlet disposed in the said at least one circulation duct; and an air fan disposed to draw the external air into the external air supplying duct. It therefore would have been obvious to one having

ordinary skill in the art to modify the device of either Fukumoto or Constantine, to include an external air supply as taught by either Krupsky or Brucken, for the purpose of allowing the entry of fresh air to the drying air circuit as is common in the art. As for the external air fan, in the arrangement of Brucken, external air is forced into the circulation duct by the fan already, to employ a second fan, or relocate the fan to the entrance, is deemed to be a mere extension/duplication of the teachings of Brucken (see **MPEP 2144.04 REVERSAL, DUPLICATION OR REARRANGEMENT OF PARTS**).

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukumoto et al. in view of either Liu et al. (U. S. Pat. No.578,627) or Mautsch (U. S. Pat. No. 1,920,313).

Re claim 18, Fukumoto is cited disclosing a washing machine, comprising :

a first tub (14);  
a second tub (13) disposed in the first tub;  
a circulation duct operatively coupled to the first tub receive air from the second tub, dehumidify the air and recirculate the dehumidified air back into the second tub to dry in the second tub during a drying operation of the washing machine; and  
a cool fins (39) associated with the circulation duct that differs from the claim only in the recitation of the multiple circulation duct and the single cooling fin arrangement. The patents to Mautsch and Liu are each cited disclosing a condenser/heat exchanger, where there is provided the arrangement of a single fin and multiple ducts (see the embodiment of fig. 10 in Mautsch and col. 3, lines 9-15 in Liu). It therefore would have been obvious to one having ordinary skill in the art to modify the condenser/heat

exchanger in of Fukumoto, to employ the single fin and multiple tube arrangement as taught by either Mautsch or Liu, since Mautsch and Liu disclose various tube and fin arrangements/embodiments, which are interchangeable with each other.

8. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applied prior art as applied to claim 18 above, and further in view of Leonard, Japan'092 or Japan'563).

Claims 26 defines over the applied prior art only in the recitation of the duct having a plurality of grooves with a helical configuration for prolonging a heat exchange time period of the hot humid air by reducing the flow of speed of water along the inner walls of the circulation duct. Note that Fukumoto discloses the grooves as described at col. 7, lines 18-21). Leonard, Japan'092 and Japan'563 are each cited disclosing are each cited disclosing an air circulation duct having a plurality of configurations (23, 24 in Leonard; 2 in Japan'092 and 3, 4 in Japan'563) for prolonging a heat exchange time period of the hot humid air by reducing the flow of speed of water along the inner walls of the circulation duct. It therefore would have been obvious to one having ordinary skill in the art to modify the grooves of Fukumoto, to include configurations as taught by either Leonard, Japan'092 or Japan'563), for the purpose of enhancing the heat transfer efficiency and removal of water from the circulating drying air as is common and old and well known in the condenser art. As for the configurations being helical grooves, the same is deemed to be of little patentable weight in that this is considered to merely be a change in shape see **MPEP IV. CHANGES IN SIZE, SHAPE, OR SEQUENCE OF ADDING INGREDIENTS, B. Changes in Shape** as noted above.

9. Claims 27 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 13-16, 24, and 25 stand allowed.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In Mautsch, Phelps, Candor, McCormick, Gray, Jr. et al., Plumer, Behrens, Pinder, Rodgers, Anderson, Sarukhanian et al., Fijas, Gunawardena and Eesley et al., note the water removal means.

12. Applicant's remarks with respect to claims 1, 3-4, 8-28 have been considered but are moot in view of the new ground(s) of rejection.

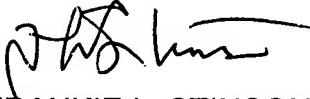
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRANKIE L. STINSON whose telephone number is (571) 272-1308. The examiner can normally be reached on M-F from 5:30 am to 2:00 pm and some Saturdays from approximately 5:30 am to 11:30 am.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached on (571) 272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fls



FRANKIE L. STINSON  
Primary Examiner  
GROUP ART UNIT 1746